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# AGRICULTURAL ENGINEERING

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WASHINGTON, D.C.

August, 1938.

## Agricultural Engineering.

Engineering's biggest job. By Harold Pinches. Yale Review. v. 27, no. 3. Spring, 1938. p. 496-515. Discussion of the effects on agriculture of engineering.

## Air Conditioning.

Attic fan cools a farm home. Electricity on the farm. v. 11, no. 7. July, 1937. p. 14, 22.

Attic fans for home cooling. By Lyman M. Forbes. American Builder and Building Age. v. 60, no. 7. July, 1938. p. 2. 32-36.

Experiment in domestic air conditioning. Architectural Forum. v. 68, no. 1. January, 1938. p. 8, 10, 56. Gives diagrammatic sections which explain the Persons system of forced air heating.

Principles and practices of air conditioning. By N.C. Ebaugh. Atlanta, Ga., Southern Power Journal, 1937. 186p.

Radiation and convection from surfaces in various positions. By Gordon B. Wilkes and Carl M.F. Peterson. Heating, Piping and Air Conditioning. v. 10, no. 7. July, 1938. p. 477-480.

Six years in air conditioning. By H.T. Holbrook. Ice and Refrigeration. v. 95, no. 1. July, 1938. p. 9-11. Ice distributor is advised to concentrate efforts on types of air conditioning installations where ice usage is really practical. Selection of equipment.

Why fans help. By J. F. Springer. Southern Power Journal. v. 56, no. 7. July, 1938. p. 30-32. Explanation of purpose of air circulation and some points on use of fans in connection with air conditioning for comfort.

## Barns.

More storage space in barn. By H.H. Musselman. Farmers Digest. v. 2, no. 3. July, 1938. p. 51-54.

## Building Construction.

Now you can build. By C.V. Gregory. Wisconsin Agriculturist & Farmer. v. 65, no. 13. June 18, 1938. p. 1, 9. F.H.A.'s new guaranteed mortgage plan spreads farm improvement costs over 20 years.

Building Construction. (Cont'd)

Planning to build? Montana Farmer. v. 25, no. 13. May 15, 1938.  
✓ p. 8.

What will it cost to build? By Deane G. Carter. Progressive Farmer.  
✓ v. 53, no. 7. July, 1938. p. 27. Only one certain way to determine cost, and that is to obtain local estimate of materials and labor for building, figured at prevailing wages and prices for kinds of material and grades desired. All other estimates are mere statements of approximate costs.

Cold Storage Plants.

A.C. calculations - for a cold storage plant. Domestic Engineering.  
v. 152, no. 1. July, 1938. p. 36-37, 98-102.

Colorado - Big Thompson Project.

Colorado-Big Thompson Project, Colorado. By Porter J. Preston. Civil Engineering. v. 8, no. 8. August, 1938. p. 517-519. Colorado-Big Thompson project provides for diverting headwaters of Colorado River, on western slope of continental divide, to lands in need of supplemental irrigation on eastern slope. Its estimated cost is \$14,000,000. Although irrigation is its chief purpose, it is estimated that 900,000,000 kw. hr. of electrical power will ultimately be developed annually in connection with diversion. Reviews numerous surveys that have been made, beginning in 1889, to determine feasibility of trans-mountain diversion of Colorado River water. Describes Grand Lake area, and various reservoirs, tunnels, and other features of present project. In addition, discusses economic justification for project, and plan for repaying cost of construction.

Combines.

New Case combines. Farm Machinery & Equipment. no. 1853, p. 16.  
Company announces several new models and improvements.

Utility combines. By Tudor Charles. Kansas Farmer. v. 75, no. 11.  
May 21, 1938. p. 318. They fit into a diversified program because they harvest so many crops.

Concrete.

✓ Concrete: its maintenance and repair. By R.B. Young. Bulletin of the Hydro-Electric Power Commission of Ontario. v. 25, no. 6. June, 1938. p. 213-222.

✓ How to make good concrete. By Carl Widseth. Farm Ideas. v. 2, no. 6. June, 1938. p. 16-17.

Cotton Gins and Ginning.

Repairing gins for better service. By C.A. Bennett and F.L. Gerdes. Cotton Ginner's Journal. v. 9, no. 10. July, 1938. p. 5-6, 16.

Cotton Machinery.

Evolution of the mechanical cotton harvester. By E.A. Johnston.

Farm Implement News. v. 59, no. 15. July 28, 1938. p. 34-36.

Requisites of successful picker: 1. It must harvest high percentage of mature cotton with minimum dropped on ground. 2. It must not seriously damage plants or immature cotton bolls. 3. It must not seriously damage cotton, so that highest possible grade of ginned cotton can be obtained. 4. It must have sufficient capacity to make its operation profitable as compared with hand picking. 5. It must gather as clean a sample as possible, with minimum amount of leaves, stems, hulls, weeds, etc., entrained in lint. 6. It must be mechanically sound in design so that it will provide satisfactory, consistent, and dependable operation, and must be simple enough that both operation and ordinary servicing of picker can be done by farm labor. 7. In order to afford most profitable utilization, mechanical harvester preferably should be attachment for farm tractor rather than self-propelled machine, so that tractor may be available for other purposes.

Dams.

Cheap little cofferdam. By Wallace B. Kane. Engineering News-Record. v. 121, no. 3. July 21, 1938. p. 94. Thirty dollars worth of timber, some plain carpentry and two maul wielders cofferdam a small bridge pier for \$85.

Civilian Conservation Corps constructs Midview Dam, Moon Lake project, Utah. By E.S. Jensen. Reclamation Era. v. 18, no. 7. July, 1938. p. 136-138.

Cross cut diversion dam upper Snake River project, Idaho. By J.R. Sutherland. Reclamation Era. v. 28, no. 7. July, 1938. p. 130-132.

Earth dams are what Dakota ranges need. Dakota Farmer. v. 58, no. 13. June 18, 1938. p. 277.

Economical buttress spacing for reinforced concrete dams. By Franklin C. Rogers. Civil Engineering. v. 8, no. 8. August, 1938. p. 545-546.

Highest multiple arch dam. Engineering News-Record. v. 121, no. 1. p. 13-18. Bartlett Dam, rising to record-breaking height of 287 feet will store floodwaters of Verde River for Salt River irrigation project in Arizona.

Precast concrete riprap for Kingsley dam. By D.A. Buzzell. Engineering News-Record. v. 121, no. 1. July 14, 1938. p. 54-55. New type of reinforced concrete riprap specified as alternate for protection of dam slopes.

Drainage.

Land drainage: an account of works of improvement in the Midway area of the Kent Rivers Catchment Board. Journal of the Ministry of Agricul-

Drainage.

ture. v. 45, no. 2. May, 1938. p. 132-137. Gives some account of works that have been carried out with aid of Grant by old Medway Catchment Board, whose programme of work is now being continued by Kent Rivers Catchment Board.

Drying (Crops)

Artificial (Machine) drying of roughage. By S.R. Winters. Hoard's Dairyman. v. 83, no. 4. February 25, 1938. p. 105.

Electricity on the Farm.

✓ Electric facts from the farm. By R.U. Blasingame. Pennsylvania Farmer. v. 118, no. 11. May 21, 1938. p. 18. Results of rural electric tests conducted on home farms.

Electricity an aid to poultrymen. By Howard S. Smith. Utah Farmer. v. 59, no. 1. July 15, 1938. p. 23.

Electricity helped us through college. By James V. Baker. Pennsylvania Farmer. v. 118, no. 13. June 18, 1938. p. 5, 13.

Piecemeal? No - in for life. By Naomi Shank. Electricity on the Farm. v. 11, no. 7. July, 1938. p. 7-8, 20.

✓ Rural electrification. By John M. Carmody. Military Engineer. v. 30, no. 171. May-June, 1938. p. 206-208.

✓ 25¢ per k.w.h. but it's coming in, not going out. J.P. Nicholson. Electricity on the Farm. v. 11, no. 7. July, 1938. p. 12-13.

Engines.

Principles of combustion for gas and Diesel engines. By R.L. Sweigert. Southern Power Journal. v. 56, no. 8. August, 1938. p. 24-26. Fundamental information required to understand what goes on inside of engine cylinder is presented in plain language. Essential equations and their use are explained.

Erosion Control.

Farm land saved. Montana Farmer. v. 25, no. 20. June 15, 1938. p. 3. North Valley County farmers joining forces to check erosion. Strip listing proves effective in holding soil.

Furrows for feed. By Ray Watson. Western Farm Life. v. 40, no. 5. March 1, 1938. p. 3, 13.

Wind erosion and means of control. By J. Hopfen. Monthly bulletin of Agricultural Science and Practice. v. 29, no. 6. June, 1938. p. 219-223.

Evaporation.

Evaporation studies. II. Influence of pan color on evaporation. By J.D. Wilson and C.A.Oatton. Bimonthly bulletin, Ohio Agricultural Experiment Station. v. 23, no. 192. May-June, 1938. p. 118-120. In summary, most important observations relative to this study are black pan lost considerably more water than white one. Differences were in same order as those in radiant energy factor; they were less marked than those existing between black and white atmometer, and made up smaller percentage of total loss due to all factors. Finally, water losses from galvanized pan correspond more closely to those from black than from white pan; this indicates untreated material (galvanized iron) to be very efficient in absorbing radiant energy.

Farm Buildings.

New farm buildings. The Farmer. v. 56, no. 10. May 7, 1938. p.7. Illustrations.

Farmhouses.

Farm houses or farm homes. By Henry J. Beckman. California Cultivator. v. 85, no. 13. June 18, 1938. p. 387, 394-395.

Farm Machinery and Equipment.

California's "Firsts" in farm machines. By F. Hal Higgins. Pacific Rural Press. v. 135, no. 26. June 25, 1938. p. 710.

F.T.C. issues second summary of report on industry. Implement & Tractor. v. 53, no. 15. July 23, 1938. p. 14-15, 42-43.

Federal Trade Commission releases second summary of its report on the Implement Industry. Farm Implement News. v. 59, no. 14. July 14, 1938. p. 27-28.

Handling 1938 harvest with modern equipment. Montana Farmer. v. 25, no. 20. June 15, 1938. p. 8, 27.

Harvester President replies to F.T.C. charges. By Sidney G. McAllister. Implement & Tractor. v. 53, no. 15. July 23, 1938. p. 13, 48.

Harvester President's reply to certain conclusions of the Federal Trade Commission. Farm Implement News. v. 49, no. 14. July 14, 1938. p. 29.

Hay choppers find year around job. By George F. Jordan. Missouri Ruralist. v. 79. June 11, 1938. p. 3, 16.

How machines have reduced labor in corn production. Farm Implement News. v. 49, no. 14. July 14, 1938. p. 44. Recent investigations by United States Department of Agriculture in cooperation with Iowa Experiment Station show that the modern farmer expends no more time or labor in producing 5,000 bushels of corn than did the farmer of 100 years ago in producing 250 bushels.

Farm Machinery and Equipment. (Cont'd)

1937 Farm equipment census. Farm Machinery & Equipment. no. 1853. May 15, 1938. p. 7. Manufacture and sale of farm equipment and related products compared with years 1935 and 1936.

Some new and ingenious farm machines. Pacific Rural Press. v. 135, no. 26. June 25, 1938. p. 711. Illustrations.

Sugar cane trash cutter. Alfred C. Maughan. International Sugar Journal. v. 40, no. 473. May, 1938. p. 203. Patent no. 2,093,134.

They laughed when new ideas for farm machinery were first advanced. By F.B. Swingle. Wisconsin Agriculturist & Farmer. v. 65, no. 11. May 21, 1938. p. 1, 10, 15.

To develop new beet growing equipment. California Cultivator. v. 85, no. 14. July 2, 1938. p. 431. University of California has been given a grant of \$70,000 by United States Beet Sugar Association to finance a three-year program of research directed toward perfection of machinery used in sugar-beet cultivation and harvesting.

Unbending backs in harvest fields. Wisconsin Agriculturist & Farmer. v. 65, no. 13. June 18, 1938. p. 10-11.

Unbending backs in the hay field. Wisconsin Agriculturist & Farmer. v. 65, no. 10. May 7, 1938. p. 5, 13-14.

Use of a baler for hay harvesting. By H.J. Denham and W.H. Cashmore. Journal of the Ministry of Agriculture. v. 45, no. 2. May, 1938. p. 125-131. Advantages of baling over normal harvesting methods are: (1) Increased feeding value. (2) Saving in field time because baling can take place at slightly higher moisture content. (3) Convenience of handling the hay in the winter months, thereby saving time and labor, and avoiding good deal of waste.

Fences.

Fence security. By Frank J. Reynolds. Farmers Digest. v. 2, no. 2. June, 1938. p. 42-44. Fundamentals are: 1. End or corner posts are foundation of fence. They must be set so they will not give or lift. 2. Intermediate or line posts are intended only to hold fence up and to keep it in place. 3. Tension curves in wire should be pulled to about one-half their normal size. They are the "springs" of the fence. They take care of expansion and contraction resulting from changed weather conditions. Tension curves also distribute the shock when fence has received a severe blow. 4. Fence should be high enough to keep livestock from reaching over and low enough to keep it from going under. 5. Inside of fence roll should be put against face of intermediate posts. 6. It pays to use good material.

### Fences. (Cont'd)

What Minnesota farmers think of electric fencing - pro and con. Farm Implement News. v. 59, no. 13. June 30, 1938. p. 18-19. Important advantages most frequently mentioned may be briefly summarized as follows: 1. Cost of constructing electric fences from one field to another is only about one-third as much as for other types of fences. 2. Livestock, once trained, is quieter and more peaceful. 3. Fence rows are kept cleaner by livestock grazing under the wire. 4. Less danger of "breaking through" fence and of damaging crops, except in dry season. 5. Bulls, stallions, boars, and "breachy cows" can be held without difficulty. 6. Less pasture wasted. Disadvantages: 1. Not dependable in dry seasons, or in other seasons, livestock stands on long, dry grass, or on loose and dry or sandy soil, when contacting wire. 2. Too much time and skill is required to build and maintain electric fence in working order. 3. May be without necessary and proper amount of electricity if controller fails to work, and, in or following storms, especially if dependent upon a high line or home plant. 4. Cannot be used as line fences because: a: It does not meet legal requirements of line fences. b: Unless livestock on adjoining farms have been trained, electric fence would be ineffective. 5. Horses may be nervous about going near wire fence in field work if they have experienced shocks from energized wires in lots or pastures. 6. Interferes with performance of radio receiving sets.

### Fertilizer Placement.

Put manure where needed. By R.L. Cook. Farmers Digest. v. 2, no. 3. June, 1938. p. 23-24.

### Fire Protection.

Water systems for fire protection on farms. Quarterly of the National Fire Protection Association. v. 32, no. 1. Part 2. July, 1938. p. 256-262.

### Fireplaces.

Building that outdoor fireplace yourself. By Richard Blazej. American Home. v. 20, no. 1. June, 1938. p. 39, 89-90.

Fireplaces. Architectural Record. v. 84, no. 1. July, 1938. p. 85-92.

### Floods and Flood Control.

Building a flood project. By N.O. Douglas. Montana Farmer. v. 25, no. 21. July 1, 1938. p. 6-7.

China's vast flood threatens to unite Hwang Ho and Yangtze. Science News Letter. v. 34, no. 1. July 2, 1938. p. 5-6. Such a junction, which some reports declare to be taking place already, will mean floods for Kiangsu province, the most populous district in China, as well as provinces already afflicted. Kiangsu province contains Shanghai.

### Floods and Flood Control.

New flood-control Act extends Federal authority. By R.B. Garrabrant. Engineering News-Record. v. 121, no. 1. July 7, 1938. p. 30-32. New act gives Federal Government power to built reservoir without consent of local authorities.

Winooski River flood control. By Paul M. Ellman. Military Engineer. v. 30, no. 172. July-August, 1938. p. 252-255.

### Frost Protection.

Oil heat saves fruit. Scientific American. v. 158, no. 2. February, 1938. p. 81. Old type smudge pots, long used in Florida and California, are being replaced in some sections by oil burning heaters from which warm air is blown over large areas by a huge engine driven propeller.

### Hay Handling.

Better ways to make hay. By H. H. Musselman. Michigan Farmer. v. 189, no. 13. June 18, 1938. p. 1, 16.

### Hay Storage.

More storage for hay and feed. By H.H. Musselman. Michigan Farmer. v. 199, no. 11. May 21, 1938. p. 3, 17.

Storage of chopped hay in ventilated containers. By S.A. Witzel. Northwest Farm Equipment Journal. v. 52, no. 6. June, 1938. p. 33-35. Purpose of paper is to present report on experiments conducted by storing chopped hay with (1) varying percentages of moisture content; (2) different lengths of cut and (3) in various types of ventilated containers.

### Heating.

Recent tests at the University of Illinois show heat absorbed and given off by building itself is highly important; will probably alter estimating methods. Air Conditioning and Refrigeration News. v. 24, no. 11. July 13, 1938. p. 6. Tests conducted on 2-ton condensing unit in Research residence of University of Illinois during summer of 1937 not only prove feasibility of using small-capacity compressors in residential cooling, but also throw some interesting highlights on heat absorbing capacity of buildings and lack of heat equilibrium existing in building walls. Data obtained in tests at Urbana are applicable to all types of cooling systems and structure, and should prove of value to engineers engaged in design of cooling systems for residences and small commercial buildings.

### Houses.

Build demonstration homes. Lumber & Building Material Dealer. v. 7, no. 6. June, 1938. p. 9-12. Designs from National small homes demonstration.

Insect Control.

Insect screens. Rural Electrification. v. 13, no. 157. June, 1938.  
p. 247-248. Experimental results supported by practical experience.

Insulation.

Insulated tanks aid cooling. Wisconsin Agriculturist & Farmer. v. 65,  
no. 11. May 21, 1938. p. 5, 19.

It pays to insulate. By C. E. Lee. Farmers Digest. v. 2, no. 2.  
June, 1938. p. 55-61. What to expect from insulation. How to  
select the materials to be used. Suggestions on construction.

Irrigation.

Deep well irrigation. By L. P. Tikiob. New Agriculture. v. 20,  
no. 10. July, 1938. p. 6.

Dike irrigation. By John Howard. Montana Farmer. v. 25, no. 20.  
June 15, 1938. p. 6.

Does irrigation pumping affect stream flow? By W.E. Code. Western  
Farm Life. v. 40, no. 11. June 1, 1938. p. 5, 23. Date  
presented are known not to be accurate. However, one becomes convinced  
that pumping has not affected return flow to a serious degree. Dimin-  
ished stream flow is responsible for diminished return flow to much  
larger degree than pumping.

Flood irrigation pays. Montana Farmer. v. 25, no. 18. May 15,  
1938. p. 6.

Irrigation outfits to fit the wet country. By F.W. Duffee. Electricity  
on the Farm. v. 11, no. 7. July 1938. p. 9-11, 24. Light  
weight portable pipe and rotating sprinklers backed by electric pumps  
are doing real job.

Life lines. By Arthur Nicholson. Country Gentleman. v. 108, no. 6.  
June, 1938. p. 20-21, 75. Discussion of irrigation in the eastern  
states.

Modern irrigation. By George D. Clyde. Utah Farmer. v. 59, no. 1.  
June 28, 1938. p. 5, 9.

Modern irrigation. By George D. Clyde. Utah Farmer. v. 59, no. 1.  
July 15, 1938. p. 18. University of California in 1932 conducted  
some extensive investigations on subject of irrigation with pressure  
sprinklers. Objectives of studies were as follows: 1. To determine  
uniform distribution for locating sprinklers and especially to deter-  
mine effect of wind pressure, speed of rotation and spacing of  
sprinklers in resulting distribution. 2. To determine loss of water  
by evaporation. 3. To determine hydraulic characteristics of sprink-  
ling system, and to prepare tables and graphs from which losses and  
sprinkler lines could be readily ascertained. 5. To determine cost  
of applying water by sprinkling. California studies indicate that

Irrigation. (Cont'd)

portable sprinkling systems have proved satisfactory in areas with high water table, or in areas where seasonal water requirements are fairly low. They are satisfactory for irrigating spring crops that require only one or two light applications in addition to normal rainfall. They are especially well adapted to topography that is difficult to irrigate by surface methods and for shallow or coarse textured soils of low water holding capacity that requires light applications at frequent intervals. Sprinkling is method that is generally satisfactory for special conditions where surface irrigation is inadvisable or impractical. It is limited principally by cost, which for most conditions is higher than for surface methods of irrigation.

New irrigation systems on Oahu plantations. C.H. Bischoff and J.M. Tanimura. Association of Hawaiian sugar technologists. Report. v. 16. 1937. p. 5-11.

Orchard irrigation in the humid States. By H.W. Gerlach. Farmers Digest. v. 2, no. 3. July, 1938. p. 43-47. Money spent on supplemental irrigation systems pays big dividends in increased fruit production, and improvement in cultural conditions of trees. Freedom from worries during short drought periods is possible, and while not 100 percent of orchard acreage can be successfully irrigated it is safe to say majority of orchards in humid states are so situated that splendid results can be obtained.

Overhead irrigation for sugar cane. New Agriculture. v. 20, no. 10. July, 1938. p. 7.

Present-day irrigation methods in China. By O.J. Todd. Civil Engineering. v. 8, no. 8. August, 1938. p. 527-530. Economic conditions and tremendous man-power available make some of primitive methods still in use as sensible as they were a thousand years ago. Native engineers, returning to China from schools of the West are teaching new methods of irrigation, but these innovations are still not feasible in many parts of the country.

Pump irrigation is good crop insurance. By Francis Flood. Farmer-Stockman. v. 51, no. 8. April 15, 1938. p. 13, 31.

Sound irrigation is finding its place in southwestern Kansas. By Tudor Charles. Kansas Farmer. v. 75, no. 10. May 7, 1938. p. 8-9. In first place, rainfall nearly always is limiting factor in crop production in southwest quarter of State. Secondly, much of land being put under irrigation has shallow water which can be lifted economically whenever needed.

South African irrigation. Reclamation Era. v. 18, no. 7. July, 1938. p. 138. Completion of Irrigation Department schemes now nearly ready in South Africa, will submerge 90 square miles of land, and place under irrigation 280 square miles, capable of sustaining 4,500 families. These schemes include Vaal Dam near Vereeniging,

### Irrigation. (Cont'd)

Transvaal, which will irrigate Vaal-Hartz Valley, Loskop Dam in Middleburg district of Transvaal, Kalfontein Dam in Orange Free State, and Egmont Dam in Wepeher district of Free State.

Uneven land wastes water. *Montana Farmer.* v. 25, no. 19. June 1, 1938. p. 6-7. Level fields essential to best results in irrigation farming.

### Land Slides.

Stabilizing earth fills with rock. By E.W. Vaughan. *Engineering News-Record.* v. 121, no. 1. July 7, 1938. p. 27-28. Study of rock blankets for holding fill slopes steeper than natural slope of earth in the fill is made for Guntersville reservoir area.

### Lubrication.

Diesel tractor lubrication. *Lubrication.* v. 24, no. 6. June, 1938. p. 61-71.

Selecting the lubricants for air conditioning and electric refrigeration machinery. *Lubrication.* v. 24, no. 7. July, 1938. p. 73-84.

Your equipment needs good oil. *Washington Farmer.* v. 63, no. 13. June 23, 1938. p. 14. Best quality is cheap at any price.

### Materials.

Developments in engineering materials. *Engineering News-Record.* v. 121, no. 1. July 14, 1938. p. 60-64. A.S.T.M. meeting brings specifications up to date and records the fruits of recent research in the field of engineering materials.

### Meters.

Device records flow of water for irrigation. *New Agriculture,* v. 20, no. 10. July, 1938. p. 7. Device which records in acre-feet total flow of irrigation water through ditch in any period of time, and which indicates depth and rate of flow has been built by Ralph L. Parshall. One of its principal advantages would be its use in connection with irrigation reservoir, where it would record automatically actual amount of water turned into reservoir at different times, and quantity run out during other periods. It is also expected that device will be found useful in connection with accurate scientific irrigation experiments as well as on farms and reservoirs.

### Milk Production.

Effect of heat and humidity on production. By S.R. Winters. *Hoards Dairyman.* v. 83, no. 10. May 25, 1938. p. 291, 304. Discussion of changes in temperature and humidity on milk production.

Plows.

Trash plow. By Jethrow Wheatley. Capper's Farmer. v. 49, no. 6. June, 1938. p. 14.

Poultry Houses and Equipment.

"Biddy's" home goes modern. By K.J.T. Ekblaw. Farm Machinery & Equipment. no. 1853. May 15, 1938. p. 12. New market opens for galvanized sheets and structural insulation.

Brooder house plans. Pennsylvania Farmer. v. 118, no. 11. May 21, 1938. p. 14-15.

Planned poultry house. By Neal Brown. Successful Farming. v. 36, no. 8. August, 1938. p. 10, 47.

Range shelter for Wisconsin flocks. By J.B. Hayes and S.A. Witzel. Wisconsin Agriculturist & Farmer. v. 65, no. 13. June 18, 1938. p. 18-19.

Power Development.

Water power in Brazil, with special reference to Sao Paulo development. By A.W.K. Billings. Civil Engineering. v. 8, no. 8. August, 1938. p. 520-523.

Power Farming.

Power farming and labor displacement. By Paul S. Taylor. Monthly Labor Review. v. 46, no. 4. April, 1938. p. 852-867. Part 2. Southwestern Oklahoma and Mississippi Delta.

Privies.

Sanitary outdoor toilet. Southern Planter. v. 99, no. 7. July, 1938. p. 29.

Pumps and Pumping.

Centrifugal pumps. Montana Farmer. v. 25, no. 20. June 15, 1938. p. 7.

Pumping for profits. By J.W. Vogel. Montana Farmer. v. 25, no. 16. April 15, 1938. p. 8-9.

Types of pumps for farm use. By Wallace George. Farmers Digest. v. 2, no. 3. July, 1938. p. 13-16. Reciprocating pumps. Centrifugal pumps. Rotary pumps.

Refrigerator Lockers.

Figures on costs and income from small town locker plant. Air Conditioning and Refrigeration News. v. 24, no. 9. June 29, 1938. p. 4.

Refrigerator Lockers. (Cont'd)

Freezer locker costs reported. Wisconsin Agriculturist & Farmer. v. 65, no. 10. May 7, 1938. p. 7, 25-26. Table gives estimated costs and income of limited service plants.

New service for farmers: Cold storage lockers. By George A. Montgomery. Capper's Farmer. v. 49, no. 6. June, 1938. p. 25.

Suggestions for freezing and storing fruits and vegetables in refrigerated locker plant. By H. H. Plagge. Ice and Refrigeration. v. 95, no. 1. July, 1938. p. 31-36. Summary of information obtained from investigations on freezing preservation of fruits and vegetables, as adapted for operators and patrons of cold storage locker plants.

Rice.

Cultivo del arroz por el sistema de transplante en la hacienda "La Otra Banda", Zana. By Luis Gonzales Prada. Vida Agricola. v. 15, no. 173. April, 1938. p. 291-301. Cultivation of rice by the system of transplanting at the Otra Banda ranch, Zana.

Silos.

Construction and use of trench silo. By J.A. Arey. Southern Planter. v. 99, no. 7. July, 1938. p. 14-15. Table gives size of herd, suggested width, depth and length of silo based on feeding cow one cubic foot of silage daily for period of 180 days.

Trial with temporary silos. By W.E. Krauss, C.C. Hayden, A.E. Perkins and R.G. Washburn. Bimonthly bulletin, Ohio Agricultural Experiment Station, no. 192. May-June, 1938. p. 71-76. Studies physical problems involved in storing legumes in temporary silos, and obtains data on quality of silage.

Silt.

Stability of earthen channels. By A.N. Wilson. Indian Engineering. v. 103, no. 6. June, 1938. p. 203. II. Effects of silt on regime dimensions.

Solar Heat.

Figuring solar heat gains of buildings. By William Goodman. Heating, Piping and Air Conditioning. v. 10, no. 7. July, 1938. p. 445-447. Theory underlying subject of solar heat gains is presented, as well as methods used in preparing tables previously published.

Tires.

Grading pneumatic tires for tractors. Implement & Machinery Review. v. 64, no. 758. June 1, 1938. p. 176-177.

Rubber tires. Pennsylvania Farmer. v. 119, no. 2. July 16, 1938. p. 1, 17.

Tires. (Cont'd)

Skid-ring rubber tires for tractors. Farm Machinery & Equipment. v. no. 1853. May 15, 1938. p. 11.

Studying pneumatic tires for farm transport wheels. Farm Machinery & Equipment. no. 1853. May 15, 1938. p. 10. Researches outlined deal specifically with rolling resistance of loads carried on rigid and pneumatic tired wheels, protection of machine or vehicle from shock, and relation between tire and soil. As far as practicable data secured will be translated into economic or dollar and cents basis. Research project dealing with pneumatic tires for transport wheels for farm machines and vehicles sponsored by American Society of Agricultural Engineers and supported in part by farm equipment, tire and rim, and wheel manufacturers has been inaugurated at Iowa agricultural experiment station, which institution provides part of financial support for enterprise.

Tractors.

Better practices in servicing farm tractors. By J.B. Torrance. Northwest Farm Equipment Journal. v. 52, no. 6. June, 1938. p. 28-29.

The Cat. Fortune. v. 17, no. 5. May, 1938. p. 85-92, 99-100, 102.

Check tractor cooling system. Implement & Tractor. v. 53, no. 7. April 2, 1938. p. 25, 34. In checking cooling system troubles, service shop mechanics will find many answers to faulty engine operation.

How much can a tractor stand? By C.W. Smith. Implement & Tractor. v. 53, no. 10. May 14, 1938. p. 22, 28-29.

Insular project no. 3. A tractor survey of the island of Porto Rico. By M.L. Vicente. Division of agricultural engineering. In Annual report of the agricultural experiment station fiscal year 1936-37. University of Puerto Rico.... San Juan, P.R., Bureau of supplies, printing and transportation, 1938. p. 144.

Longer tractor engine life featured at S.A.E. meeting. Implement & Tractor. v. 53, no. 9. April 30, 1938. p. 12-13, 24-25. Causes affecting wear of moving parts in valve train, shop practice, tractor lubrication, piston rings and cylinders, spark plugs, dust house testing and hardened crankshafts and cylinders were some of the subjects taken up in one three-hour session at the S.A.E. meeting.

Modern tractors, tools, gasoline, oil and rubber mobilized for seasonal farming in California. California Cultivator. v. 85, no. 7. March 26, 1938. p. 199. Illustrations.

Modern tractors for all farm jobs. Utah Farmer. v. 58, no. 16. April 10, 1938. p. 1. Illustrations.

Tractors. (Cont'd)

New tendencies in the construction of small tractors. By H.J. Hopfen. Monthly Bulletin of Agricultural Science and Practice. v. 29, no. 5. May, 1938. p. 208-T - 211-T.

Now, a four-plow tractor designed for rubber. Farm Implement News. v. 59, no. 15. July 28, 1938. p. 24-35. It's the M-M Standard "U" H-C powered for four bottoms and built with five speeds forward.

Put lights on your tractor. Farmer-Stockman. v. 51, no. 8. April 15, 1938. p. 25. Save time and money and soon repay the small cost. With good lights and relief driver, tractor owner can plow and do most other operations 16 or more hours per day, covering much greater acreage, getting greater efficiency out of his equipment, and completing work when soil and weather are most favorable.

R.A.S.E. tractor testing results. Implement & Machinery Review. v. 64, no. 758. June 1, 1938. p. 190-191.

Recent developments in the farm tractor. By Ben D. Moses. California Cultivator. v. 85, no. 7. March 26, 1938. p. 195, 215.

Recent tractor developments. Mechanical Engineering. v. 60, no. 4. p. 333-334.

Small single-track tractor replaces two farm horses. Popular Mechanics. v. 69, no. 2. February, 1938. p. 185. Operates on single-track unit which is both means of steering and of propelling machine. Two-cylinder motorcycle engine supplies power. Tractor may be used with rear wheels and drawbar, or the rear wheels may be replaced by any horse-drawn implement, suchas mower, ten-foot cultivator or two-row corn cultivator. Adaptation and attachment of implements is simple. One man operates tractor and implement. Machine is so narrow that it may be used in row cultivation, and so low that it can be used under trees. Weight of the machine is so distributed and steering mechanism so designed as to make for excellent traction and maximum ease in steering. The tractor may be run in small circles. Operates on about one-half gallon of gasoline per hour.

Small tractor arrives. By Andrew M. Howe. Printers' Ink. v. 182, no. 4. January 27, 1938. p. 24-26. Allis-Chalmers in market; Ford will follow; 4,000,000 farm outlet opens.

Superannuated cars and tractors on U.S. farm. Farm Implement News. v. 59, no. 10. May 19, 1938. p. 32. Percentage of automobiles, trucks, and tractors of each year's model on farms and ranches, January 1, 1938.

Survey shows most tractors out of date. Implement Record. v. 35, no. 6. June, 1938. p. 21. Table shows percentage of tractors of each year's model on farms, January 1, 1938.

Tractors. (Cont'd)

There are modern tractors for all farm jobs. Oregon Farmer. v. 61, no. 7. March 31, 1938. p. 6.

There are modern tractors for all farm jobs. Washington Farmer. v. 63, no. 7. March 31, 1938. p. 6.

Today's tractor. By G.W. McCuen. Ohio Farmer. v. 181, no. 8. April 9, 1938. p. 5, 32.

Tractor care. By C.N. Hinkle. Farmers Digest. v. 2, no. 1. May, 1938. p. 59-64.

Tractor sales break all records. Farm Machinery & Equipment. no. 1850. February 15, 1938. p. 8. Census of 1937 tractor, combine and grain thresher production and sales.

Tractor survey. Farm Implement News. v. 59, no. 8. April 21, 1938. p. 31. Views of 1300 farmers on high compression engines and rubber tires.

Tractor trouble shooter. Reese Larson. Country Home Magazine. v. 62, no. 5. May, 1938. p. 17, 29.

Tractors for rent. Farm Journal. v. 62, no. 8. August, 1938. p. 9, 21.

Tractors on United States farms. Farm Implement News. v. 59, no. 7. April 7, 1938. p. 20.

What's new in farm tractors? Montana Farmer. v. 25, no. 14. March 15, 1938. p. 6.

Trucks.

Farm motor trucks prove their worth. Farm Machinery & Equipment. no. 1853. May 15, 1938. p. 3-4. More than 50 percent of livestock receipts are "Drive-Ins."

Valuation.

Proceedings of the Rural group sessions, National appraisal forum held under the auspices of the Joint committee on appraisal and mortgage analysis. Compiled by L.G. Porter. Washington, D.C., 1938. 84p. Mimeographed.

Underwriting manual; underwriting and valuation procedure under title II of the National housing act. By the Federal housing administration. Washington, D.C. U.S. Govt. print. off., 1936. 1936p.

Vapor Pressure.

Vapor pressures in studying moisture transfer problems. By H.J. Barre. Agricultural Engineering. v. 19, no. 6. June, 1938. p. 247-249.

Ventilation.

Electric ventilation of dairy stables. W.C. Harrington. Amherst, Mass. n.d. 3p. Massachusetts state college. Engineering extension series. No. 4. Mimeographed.

Wagons.

How to make a low wagon. Amherst, Mass., n.d. 1p. Massachusetts state college. Engineering extension series. No. 26. Mimeographed.

Water, Underground

Empleo agricola del agua subterranea en el Peru. Vida Agricola. v. 15, no. 173. April 1938. p. 317-323. Agricultural use of underground water in Peru.

Municipal ground water supplies of North Dakota. By G.A. Abbott and F.W. Voedisch. Grand Forks. N.Dak., 1938. 99p. North Dakota Geological survey. Bulletin 11. Processed.

Geology and ground-water resources of South-central Nebraska with special reference to the Platte river valley between Chapman and Gothenburg. By A.L. Lugo and L.K. Wenzel. Washington, U.S. Govt. print. off., 1938. 342p. U.S. Geological survey. Water-supply paper 779.

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Electric water heaters for dairies. By C.I. Gunness. Amherst, Mass., n.d. 1p. Massachusetts state college. Engineering extension series. No. 19. Mimeographed.

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Future of water allocation, and developments in interstate agreements. By Duane E. Minard. Journal of American Water Works Association. v. 29, no. 7. July, 1937. p. 942-959.

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Instructions for disinfecting wells. W.C. Harrington. Amherst, Mass., n.d. 1p. Massachusetts state college. Engineering extension series. No. 51. Mimeographed.

Purification of well water. Amherst, Mass., n.d. 1p. Massachusetts state college. Engineering extension information series. No. 11. Mimeographed.

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Colorado water flows away. By H.B. Dye. Western Farm Life. v. 40, no. 5. March 1, 1938. p. 4.

Connecticut river valley water resources bibliography. Assembled by the New England regional planning commission. Boston, Massachusetts, 1936. 134p. Publication no. 40. Mimeographed.

Development of Texas rivers; a water plan for Texas. Austin, Tex., Texas planning board, 1938. 156p. Mimeographed.

Preliminary survey of the water resources of New York. In a Report to the Governor, the Hon. Herbert H. Lehman by the New York state planning council for the Division of State planning in the Executive department. p. 101-118.

Progress in Federal conservation of water resources 1936-1937. By Abel Wolman. Journal of American Water Works Association. v. 29, no. 7. July, 1937. p. 915-941. From material presented certain generalizations may be warranted: 1. Real progress has been made in establishing those areas of basic hydrologic data and research in which important and costly deficiencies are operative. 2. Beginning has been made in formulation of national water policy, in which area of thinking is being deliberately and constantly expanded beyond limited local perspective. 3. Important steps forward in coordination and integration of planning for water resources development have occurred during last few years on Federal as well as interstate, state and local levels of government with increasing emphasis on multiple use, on integration, and on more comprehensive policy. 4. Construction

Water Supply.

on part of Federal Government and of State and local subdivisions thereof is progressing rapidly. With problems of flood, drouth, pollution, and power in public mind it is probable that this emphasis on water resources construction will continue.

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Water resources and flood relief. In report to the Governor, Hon. Herbert H. Lehman, by New York state planning council for Division of State planning in Executive department. p. 25-34.

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Water table survey in the lower Rio Grande valley. Part four - LaFeria water control and improvement district Cameron county no. 3. Sponsored by State board of water engineers. n.p., n.d. Works progress administration project 1759. 45p. Mimeographed.

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Fresh drinking water on tap. By Harry G. Davis. Farm & Ranch. v. 37, no. 3. February 1, 1938. p. 21.

Running water for farm and home. By M.G. Huber. Orono, Maine, 1938. 31p. University of Maine. Extension service. Bulletin no. 250.

Water works for the farm. By Herbert C. Angster. Electricity on the Farm. v. 11, no. 5. p. 9-11. Explains various types of water systems; offers suggestions on selection of pump, and in general outlines points which should be taken into consideration in choosing and installation of water system.

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Water works for the farm. Article II. By Herbert C. Angster.  
Electricity on the Farm. v. 11, no. 6. June, 1938. p. 14-16, 26.

Waterlogging.

Waterlogging in the land of Five Rivers. By N. Gopal. Indian Engineering. v. 103, no. 6. June, 1938. p. 197-198.

Weeds.

At the front in our weed war. Successful Farming. v. 36, no. 5. May, 1938. p. 12-13.

Bindweed control by clean cultivation. By H.W. Gerlach. Agricultural Engineering. v. 19, no. 5. May, 1938. p. 219. Article deals with results obtained from clean cultivation method. Results of tests made definitely indicate that reasonable cost of clean-cultivation method makes it thoroughly practical and desirable particularly for relatively low-value agricultural land. Control method is simple and effective, and can be carried on either with large county-owned outfitts or with equipment as regularly found on average Great Plains farm. Control by this method is based primarily on starvation of plant. For efficient control of plant cultivation method must be carried on repeatedly throughout year. Tests were carried on chiefly with duckfoot or blade type cultivators. Blades or sweeps should overlap each other in such a way that complete shearing action on the roots is obtained. Similar action is impossible with disk or shovel type cultivator as these act merely as uprooting agents.

Cost of bindweed eradication by the tillage method. By J.V. Srb, L.S. Evans and F.D. Keim. Journal of American Society of Agronomy. v. 30, no. 5. May, 1938. p. 425-429. Purpose of this paper is to present an analysis of cost data of actual eradication operations conducted on field-size scale in two Nebraska counties, Lancaster and York, during period 1935 to 1937.

Dempster announces bindweed exterminator and field cultivator. Implement & Tractor. v. 53, no. 11. May 28, 1938. p. 22.

Framing a weed control program for Uncompahgre Valley. By W.H. Mercer. Reclamation Era. v. 28, no. 6. June, 1938. p. 116-117.

The "G-Men" are after "Creeping Jenny." By H.L. Harris. The Furrow. v. 43, no. May-June, 1938. p. 4, 11-12.

How to make a brush burner. By W.C. Harrington. Amherst, Mass., n.d. 2p. Massachusetts state college. Engineering extension series. No. 21. Mimeographed.

Menacing morning glory. Pacific Rural Press. v. 134, no. 21. November 20, 1937. p. 514. Discusses method of control.

Woods. (Cont'd)

Methods of eradicating bindweed. By F.L. Timmons. In Report of Kansas state board of agriculture for quarter ending March, 1938. p. 102-112.

The war on bindweed--the job, the law, the plan of attack. T.F. Yost. In Report of Kansas state board of agriculture for quarter ending March, 1938. p. 94-102.

Weeds steal \$450 a farm. By Elmer J. Johnson. Western Farm Life. v. no. June 1, 1938. p. 4. Some things to remember in controlling noxious weeds are: 1. Sodium chlorate presents fire hazard when solutions dry on clothing, plants or wood. If applied as liquid, or if any of powder gets on clothes, be sure to wash them thoroughly before they dry. Wearing rubber boots and washing them off before dry is good practice. 2. Commercial products similar to sodium chlorate bear less fire hazard, but usually require one-third more of product to be effective. 3. Late fall is best time to apply chemicals except on perennial peppergrass, which should be treated in late spring or early summer. 4. Start control when patches are small. 5. Moist soil is necessary for most effective chemical treatment. 6. Burning with fire does not kill lower roots. 7. It takes about 6 pounds of chlorate a square rod. 8. Chemically treated soil is sterile for about 3 cropping years, but this is good feature. 9. When treating weed patch be sure to go beyond weed growth limit to get any roots extending beyond patch. 10. Clean cultivation for 2 years is probably best method for large areas. 11. Smother crops are good to follow clean culture. 12. Plant weed-free seed. Cheap seed is likely to contain noxious weed seed.

Woods waste water. By Harry F. Blaney. Pacific Rural Press. v. 135, no. 11. March 12, 1938. p. 291.

Weirs.

River regulation. By John W. Lewis. Indian Engineering. v. 103, no. 6. June, 1938. p. 192-194. How present-day requirements are met by automatic weirs.

Wheat Smut.

Wheat smuts and their control. By R.W. Loukel and others. Washington, U.S. Govt. print. off., 1938. 18p. U.S. Department of agriculture. Farmers' bulletin no. 1711, revised.

Wood Preservation.

Directional permeability of seasoned woods to water, and some factors which affect it. By Harvey D. Erickson, Henry Schmitz and R.A. Gortner. Journal of Agricultural Research. v. 56, no. 10. May 15, 1938. p. 711-745.

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✓ Service of paing on woods treated with termite repellents. By Merle Randall and T.C. Doody. Industrial & Engineering Chemistry. v. 30, no. 4. April, 1938. p. 444-449. Report is a summary of reconnaissance experiments on service of paints with typical western woods - Douglas fir, redwood, and ponderosa pine. The same cover coat, typical lead-zinc formula, was used in every case, but primer was varied. Results are favorable to use of aluminum primer made with either typical spar varnish or a synthetic-resin mixing varnish over conventional primer or reduced cover coat. Test also included painted panels of woods with typical preventive treatments. Observations of ratings of underside of panels, repaintability, and cupping after 54-month exposure are included; for latter, unpainted control, untreated, and treated panels were exposed for comparison.

✓ Wood presoration. By G.M. Hunt and G.A. Garratt. 1st ed. New York, McGraw-Hill book company, inc., 1938. 457p.

Woodlots.

Need for farm forestry. By Raphael Zon and R.N. Cunningham. St. Paul, Minn., 1937 15p. University of Minnesota. Agricultural extension division. Special bulletin 191.